

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference Cal 87275	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/14545	International filing date (day/month/year) 12.12.2003	Priority date (day/month/year) 20.12.2002
International Patent Classification (IPC) or both national classification and IPC C10G67/04		
Applicant ENI S.P.A. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 24.05.2004	Date of completion of this report 10.09.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Gilliquet, J-N Telephone No. +31 70 340-4573



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP 03/14545

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-33 as originally filed

Claims, Numbers

1-36 as originally filed

Drawings, Sheets

1 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-36
	No: Claims	
Inventive step (IS)	Yes: Claims	1-36
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-36
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following document/s/:

D1: US-A-4 640 762 (SOUHRADA FRANK ET AL) 3 February 1987 (1987-02-03)

1. Novelty and inventive step of present independent claim 1

1.1 Document D1 (See cl. 1, §2-4 of col.3 and fig. 1), which is regarded as being the closest prior art to the subject-matter of claim 1, discloses a process for the conversion of heavy residues by the combined use of the following three process units: hydroconversion with catalysts in slurry phase (HT), distillation or flash (D), deasphalting (SDA), comprising the following steps:
mixing the heavy feedstock and the stream containing asphaltenes obtained in the deasphalting unit with a suitable hydrogenation catalyst and sending the mixture obtained to a hydrotreatment reactor (HT) into which hydrogen is charged;
sending the stream containing the hydrotreatment reaction product and the catalyst in dispersed phase to one or more distillation or flash steps (D) whereby the different fractions coming from the hydrotreatment reaction are separated;
recycling at least part of the distillation residue (tar) or liquid leaving the flash unit, containing the catalyst in dispersed phase, rich in metal sulfides produced by demetallation of the feedstock and possibly coke, to the deasphalting zone (SDA) in the presence of solvents obtaining two streams, one consisting of deasphalted oil (DAO) and the other containing asphaltenes.

1.2 The subject-matter of present claim 1 differs from this known process in that the stream containing the hydrotreatment reaction product and the catalyst in dispersed phase, before being sent to one or more distillation or flash steps, is subjected to a high pressure separation pre-step in order to obtain a light fraction and a heavy fraction, the heavy fraction alone being sent to said distillation step(s) (D).

1.3 The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

1.4 The problem to be solved by the present invention may be regarded as how to optimize the production of diesel gas oil from heavy feedstocks.

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1.5 The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) as no document of the prior art on file describes the possibility of integrating a high pressure separator nor gives any hint to the effect of this integration.

2. Dependent claims

2.1 Claims 2-36 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.